EXCHANGE RATE EXPECTATIONS AND THE CURRENT EXCHANGE RATE: A TEST OF THE MONETARIST APPROACH

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Abstract. The monetarist model of the exchange rate includes expectations of the future exchange rate as a determinant of the current exchange rate. This paper investigates whether expectations are a significant determinant of the exchange rate. An expectations process that is consistent with a basic monetarist exchange rate model is considered. Alternative measures of expectations are generated using this process. In the empirical tests, while the standard forward exchange premium measure of expectations is statistically insignificant, some of the alternative measures are observed to be statistically significant.

An important feature of the standard monetarist exchange rate model is that expectations of the future exchange rate are a major determinant of the current exchange rate. One version of the monetarist exchange rate model in its empirically testable form is:

\[ s_t = -(k_1 - k_2) + (m_1 - m_2) + \beta (f - s) - \alpha (y_1 - y_2)_t \]  

(1)

where

- \( s_t \) = the exchange rate at time \( t \);
- \( k_t \) = a constant at time \( t \);
- \( m_t \) = the equilibrium level of money supply at time \( t \);
- \( f_t \) = the forward exchange rate at time \( t \);
- \( y_t \) = the level of real income at time \( t \);
- subscripts 1 and 2 represent countries 1 and 2; and all variables are in logarithms.

In (1), expectations of the future exchange rate determine the current exchange rate through the measure \((f - s)\), which is the forward exchange rate premium (or discount) on the current exchange rate. Using the simplified form of the interest rate parity relation, expression (1) can be rewritten using \((i_1 - i_2)\) in place of \((f - s)\), where \((i_1 - i_2)\) represents the difference between the interest rates of the 2 countries (unlike other measures in (1), the interest rates are not in logarithms). As a matter of fact, the monetarist model originally uses the interest difference; the \((f - s)\) measure (hereafter called FP) is used as a substitute assuming that the International Fisher relationship holds and that the forward rate formed on the basis of rational expectations equals the expected spot rate. Both measures are equal to the expected change in the exchange rate if the following conditions hold: real interest rates are constant and equal in the 2 countries; purchasing power parity holds; and free financial capital mobility exists. With these conditions, the interest difference equals the expected inflation difference and the expected change in the exchange rate.

The objective of this paper is to specify and test an alternative measure for the expected change in the exchange rate in (1), presently represented by the interest

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difference or the forward premium. This is of interest for 2 reasons. One reason is that the presently used measures may be unreliable; for a variety of causes, the forward exchange rate may not be an unbiased predictor of the future exchange rate; if the FP measure is not a true measure of expectations, model estimates will be biased and inconsistent (known as the errors in variable problem); and both measures are endogenous to the current exchange rate, the result being the simultaneity problem. A second reason for considering an alternative measure for expectations is to enhance understanding of the role of expectations in determining the current exchange rate. The question to be answered is whether the impact of expectations on the current exchange rate is a function of the expectations measure used.

The monetarist exchange rate model is tested, therefore, with alternative measures of expectations. This pursuit also examines the role of expectations in exchange rate determination within the context of a monetarist model. First, an alternative measure of expectations that takes a monetarist approach is specified, or one that is consistent with model (1). In other words, an expectations process that uses the monetarist model is assumed. The methodology for the empirical testing of this measure is then discussed. Following this, results for the Deutsche mark are presented.

THE MONETARIST EXPECTATIONS PROCESS

Given that model (1) captures expectations of the future exchange rate and that the interest difference and FP measures are substitutes, model (1) may alternatively be expressed in the following ways:

\[ s_t = -(k_1 - k_2)h + (m_1 - m_2)_t - \beta (\Delta S/S)_{t,1} - \alpha (y_1 - y_2)_t \] (2)

\[ s_t = -(k_1 - k_2)h + (m_1 - m_2)_t + \beta (i_1 - i_2)_t - \alpha (y_1 - y_2)_t \] (3)

where

\[ (\Delta S/S)_{t,1} \] is the expected change in the exchange rate between periods \( t \) and \( t + 1 \).

Assume that expectations are formed using model (3). From (3), the rate of change form of the exchange rate is obtained as:

\[ (\Delta S/S)_t = (S_t - S_{t-1})/S_{t-1} \]

\[ = [(m - k + \beta i - \alpha y)_t - (m - k + \beta i - \alpha y)_{t-1}]_1 - \\
\]

\[ [(m - k + \beta i - \alpha y)_t - (m - k + \beta i - \alpha y)_{t-1}]_2. \] (4)

If (4) is used to form expectations of the change in the exchange rate, then

\[ (\Delta S/S)_{t,1} = [(m - k + \beta i - \alpha y)_{t,1} - (m - k + \beta i - \alpha y)_t] - \\
\]

\[ [(m - k + \beta i - \alpha y)_{t-1} - (m - k + \beta i - \alpha y)_{t-1}]_2. \] (5)

In order to reduce (5) to an empirically testable form, assume that \( \alpha = 1, k_{t+1} = k_t \) and \( i_{t+1} = i_t \). (5) then becomes:

\[ (\Delta S/S)_{t,1} = [(m - y)_{t,1} - (m - y)_t]_1 - [(m - y)_{t-1} - (m - y)_t]_2. \] (6)

The right side of (6) can be expressed in anti-logarithms as:

\[ (\Delta S/S)_{t,1} = [(M/Y)_{t,1} - (M/Y)_t]/(M/Y)_t]_1 - \\
\]

\[ [(M/Y)_{t-1} - (M/Y)_t]/(M/Y)_t]_2. \] (7)

Therefore (7) gives an expectations process that uses money and real income variables.